

WHAT IS CLAIMED IS:

1. An apparatus for plasma doping, comprising:

5 a vacuum container defining a chamber therein, the container having a portion made of dielectric material, the portion having an impurity to be doped in a substrate provided in the chamber; and

10 a plasma source for generating a plasma in the chamber by forming an electric field through the portion of the container, causing ion in the plasma to impinge against the portion of the container to draw the impurity out of the portion of the container into the chamber.

2. An apparatus of claim 1, wherein the impurity is deposited on a surface of the portion of the container.

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3. An apparatus of claim 1, wherein the impurity is provided inside the portion of the container.

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4. An apparatus of claim 1, wherein the plasma source has a coil or antenna and a power source for applying a high frequency power to one end of the coil or antenna and thereby generating the plasma in the chamber, the power source having a first power supply for supplying a first power with a first frequency (f1) and a second power supply for supplying a second power with a second frequency (f2).

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5. An apparatus of claim 4, wherein the other end of the coil or antenna is grounded.

5 6. An apparatus of claim 1, wherein the plasma source has a coil or antenna, a first power source for applying a first high frequency power to the coil or antenna and thereby generating the plasma in the chamber, a biasing electrode provided between the coil or antenna and the
10 portion of the container and a second power source for applying a second high frequency power to the biasing electrode.

7. A device having a part or a whole of the substrate to
15 which the impurity is doped by means of the apparatus in claim 1.